ALMA
ASSET & LIABILITY MANAGEMENT ASSOCIATION

Liquidity Buffer Management

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Chapter 1 – Liquidity Reserves Overview

HQLA Bonds Portfolio and Central Bank Deposits Partition

- Crédit Agricole liquidity buffers are managed as following :

  - HQLA bonds portfolios
    - Funded by MLT resources or stable deposits
    - These portfolios are driven by diversification and help to improve the net banking income by allowing to mitigate the cost of excess stable funding

  - Central Bank deposits
    - These deposits are funded per the excess of short term funding (any deposit <= 1 yr)

Chapter 1 – Liquidity Reserves Overview

Central Bank Deposits

- Central Bank deposits :

Central Banks (in Bn€)	Outstanding amount at 31-Dec-18
ECB (Banque de France et Luxembourg)	42.4
Federal Reserve (US)	4.3
Bank of Japan	26.8
Bank of England	1.4
Hong Kong Monetary Authority	0
TOTAL	**74.9**

Other Central Banks deposits out of the main treasuries follow up (i.e. CA.SA, CACIB and CACEIS) at 31-Dec-18 : €8.8bn

- Split between the main Central Banks
- There are 17 treasuries in the CACIB network with access to the local Central Bank
- Sum of the local Base of short term investors +/- short term arbitrages done per the treasury teams in order to reduce the cost of the reserve
- The global balance is highly of customer demand.

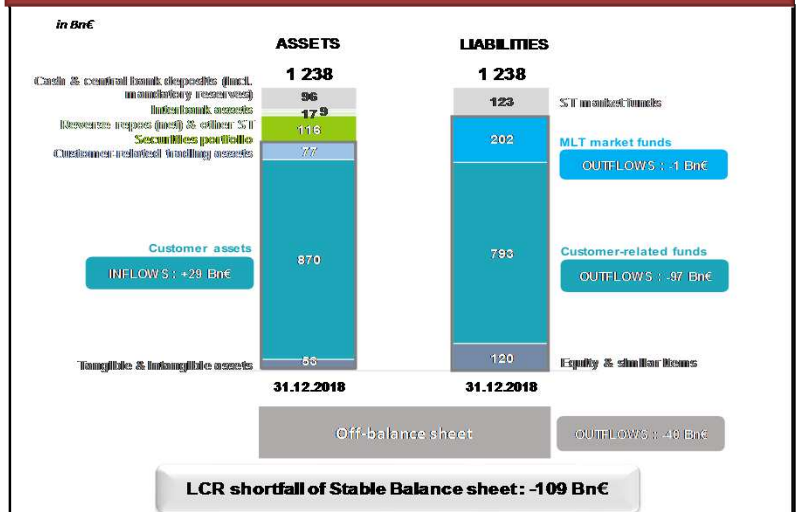
Chapter 1 – Liquidity Reserves Overview

Bonds *Portfolio Size*

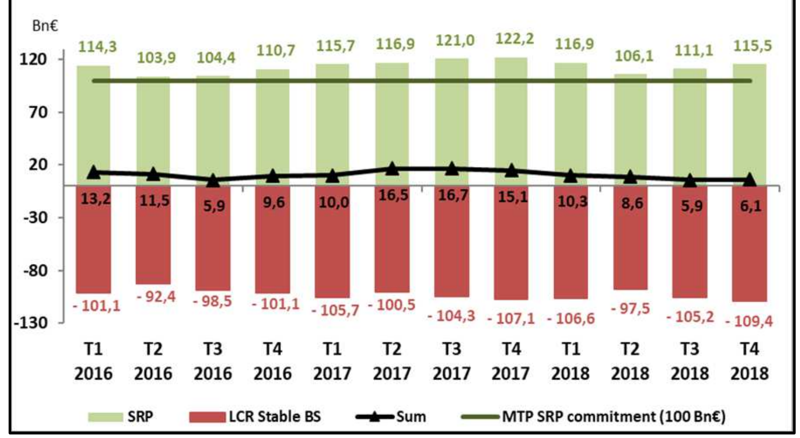
- Credit Agricole Group's SRP (Stable Resources Position) is a central figure for liquidity purposes within financial communication and steering
- The goal for SRP amount is to be able to satisfy LCR regulatory constraint during crisis times for which short term debt markets are closed
- Hence SRP goal is linked to CAG sheets (balance and off-balance)
- The SRP goal amount must cover LCR deficit generated by "*stable balance sheet*"
  - "*Stable balance sheet*" means all elements taken into account in SRP computation and off-balance sheet elements (see in the opposite graph)
  - "*LCR deficit*" generated by "*stable balance sheet*" is computed with outflows, inflows and reserves for these elements (included LCR off-balance sheet outflows)
  - the "*business balance sheet*" is equivalent to "*stable balance sheet*" (MLT market resources outflows are very small)

- A SRP over 100 B€ seems sufficient to cover the *"LCR deficit*" generated by *"stable or business balance sheet"* (see in the opposite graph)

LCR shortfall of the stable BS



SRP vs. LCR shortfall of the stable BS



Chapter 1 – Liquidity Reserves Overview

A Significant HQLA buffer

Central bank deposits and Govies represent more than 80% of the total HQLA buffer

80% of HQLA assets (excluding CB deposits) are rated ≥ AA

Top-10 HQLA counterparts *(incl. Central Banks deposits)*

Rank	Counterpart type	Counterpart name
1	Central Bank	Bank of France
2	Central Bank	Bank of Japan
3	Sovereign	France
4	Central Bank	Bank of Luxembourg
5	Sovereign	Italy
6	Supranational	European Investment Bank
7	Gvt agency	Caisse d'amortissement de la dette sociale
8	Supranational	European Financial Stability Facility
9	Central Bank	Federal Reserve System (US)
10	Sovereign	Belgium

Split of HQLA reserves by rating *(excl. CB deposits)*

Rating	%
AAA	23%
AA	57%
A	6%
BBB	10%
BB	1%
≤ B	1%
Not rated	2%

Credit Agricole bond portfolio (used as a liquidity buffer) is close to €100 bn, here below a split from a HQLA perspective :

Category	% of the CAG portfolio
Sovereign & sub sovereign	65%
Supra national	11%
Covered bond	5%
Corporate	9%
Bank	10%

Notional amount

HQLA level	
1	91%
2A	6%
2B	3%

MTM after haircut

Chapter 2 - Bond Portfolio Management and risk framework

Management principles 1/2

- The portfolio management is articulated around several principles :
  - ➢ Organisation between Crédit Agricole entities :
    - Crédit Agricole SA **defines centrally the steering principles** for the entire Group
    - 85% of CASA Group limit (€ 119 Bn) **is allocated to four entities** : CASA, CACIB, CACEIS and CARIPARMA.
  - ➢ Operational organisation :
    - Crédit Agricole Group's investments above one year (remaining maturity) are mainly micro hedged so that they are immune to interest rate risk (ie we invest in **asset swaps**).
    - **Liquidity tests** are mandatory to demonstrate the liquidity of the portfolio. It consists in a repo trade on 5% of a portfolio made of HQLA level 1 (only with a haircut of 7%, also called 1B), level 2A and 2B.
    - **The Group Treasurer decides** which portions are invested in securities or in Central Bank deposits within the liquidity reserve, regarding the cost of investing in securities relatively to the central Bank deposit
    - The **allocation between euros and other currencies** is related to the entity activity. A part is locally managed by the entity itself to face local regulatory requirements and the rest is centrally managed by the ALM department (to ensure that the overall allocation is balanced in the Group balance sheet).
    - To appreciate the opportunity of investing in specific bonds we developed a "RAROC **breakeven**" (RAROC stands for Risk Adjusted Return on Capital)
      - Practically the asset swap margin is **adjusted for different factors** such as capital requirement cost, RWA (Risk Weighted Assets) , HQLA haircut, taxation and compared to the ECB facility deposit rate.
      - Besides we use an **optimizer** which calculates and compares the RAROC breakeven for an entire universe and defines the portfolio which best fits our limits in the current market conditions.
      - This optimizer will be updated to embed the NSFR impact of the investments

Management principles 2/2

- Strategies for optimizing the cost of building a LCR portfolio and securing its management :
  - **Repo trades on HQLA bonds :** Crédit Agricole SA is authorized to improve its profitability with repo trades on HQLA bonds if the rate is lower than Central Bank marginal deposit facility rate, when traded within a civil quarter and without balance sheet footprint on the turn and if the cash is deposited in Central Bank account
  - **Repo/reverse repo :** operations to generate (collateral upgrade) or monetize (collateral downgrade) LCR (and/or NSFR in the future) or reduce the cost of LCR (same HQLA level in collateral swap).
  - **Forward bonds** : to secure unrealized P&L on ASW

- An ESG policy is currently being set up focusing on :
  - An issuer black list , working along with GCA sustainable department
  - ESG rating taken into account for new investments
  - A sustainable bonds objective of € 6 Bln is set at a Group level mainly constituted with green bonds

Chapter 2 –Bond Portfolio Management and risk framework

Risk management framework

- The portfolios management is based on several criteria :
  - **Volume** :
    - Credit Agricole SA Group : size of portfolios is based on stable LCR requirements
    - The volume in nominal is monitored by limits and alert thresholds.
  - **Stress** : limits and / or alert thresholds for all entities
    - Two risk indicators on stress scenarios measures :
      - **Stress Group 2019** : hypothetical stress based on the realization or intensification of several risks (ie the main stressed economic scenario of the bank)
      - **1 year adverse stress** : stress scenario that shocks each risk factor with the worst yearly variation observed over a long historical period (over 10 years).
  - **Concentration** : with limits or alert thresholds to manage diversification
    - On **France**
    - On **peripheral countries**, with restrained limits , in outstanding and duration. It should be noted that only Credit Agricole Italia is allowed to invest on BTP
  - **Maturity** by sector
  - **Issuer risk** : limits are validated at Group level and then distributed among main entities or at local level within global framework for Crédit Agricole SA Group

Chapter 2 - IFRS9 principles : CRSBB

- CSRBB (Credit Spread Risk in the Banking Book) : the risk driven by changes in the market perception about the price of credit risk, liquidity premium and potentially other components.

- CSRBB as defined by EBA Guidelines relates to Banking Book assets :
  - that are actively traded on a deep and large market,
  - that are held in a business-model envisaging a possible sale before maturity in a business-as-usual environment,
  - whose market value is affected by the Credit Spread-risk component (changes in the market value which are not explained by interest rate risk or by '*expected credit / (jump to-)default risk*')

- Items accounted for at amortised cost (assets accounted in HTC) are not considered *CSRBB assets*.

- Therefore, since the entry into force of IFRS9 standards, Crédit Agricole Group set the two following objectives : 60% of the portfolios outstandings in HTC (40% in HTCS) and 70% of the stress group in HTC (30% in HTCS)